VII. "On the Distorted Skulls found at Wroxeter (Salop), with a Mechanico-Chemical Explanation of the Distortion." By Henry Johnson, M.D., Shrewsbury. Communicated by Erasmus Wilson, Esq. Received June 19, 1862.

(Abstract.)

The author states that about twenty crania were brought from the excavations at Wroxeter. Of these, two were discovered at the bottom of a hypocaust, seven feet below the surface of the earth. Of the remaining nineteen, which were dug up in the Orchard some distance from the other excavation, nearly one-half, that is *nine*, were more or less deformed. As the deformed skulls were found lying under less than two feet of light earth, whilst those which were buried under, and pressed by, seven feet of rubble or heavy earth were not deformed, he thinks that the pressure theory alone will not satisfactorily account for the phenomena. The idea occurred to him that some chemical agency was at work in the former case which did not operate in the latter. He ascertained by experiment that the soil of the Orchard was acid, reddening litmus, whilst that of the hypocausts was neutral or alkaline.

The author goes on to show that the acidity of the soil of the Orchard, and of vegetable mould in general, is due to the presence of free carbonic and nitric acids, which are not to be detected in earth taken from some depth, such as that of the hypocaust or a deep pit. That carbonic acid is capable of dissolving bone (that is, carbonate and phosphate of lime) is abundantly proved by more than one experiment. A dried and weighed slip of bone was introduced into a bottle with distilled water highly charged with carbonic acid gas. In a month's time it had decidedly lost weight and become somewhat *flexible*.

The author's first impression was that *humic* acid was the solvent of bone in the earth. He believes that traces of alkaline humates may always be discovered in "the washings" of soil, but that this fact has nothing to do with the solution of buried bones, and therefore he does not pursue the subject.

The author draws, therefore, the following conclusions:—

1. That the distortion of the skulls found at Wroxeter is not *congenital*, but *posthumous*.

2. That pressure alone is not the cause of the deformity.

3. That besides the softening effect of continuous moisture acting for ages upon the cartilaginous or animal matter of the bones, there is proof of the presence of free carbonic and nitric acids very generally in soils, and more particularly in black mould, such as that of the Orchard at Wroxeter.

4. Nitric acid may also be discovered in small quantity. But carbonic acid is almost always present in soil where air and moisture come in contact with organic matters in a state of decomposition. He thinks that this is the principal cause of the solution of bone in the earth, rendering it softer, and more ready to bend or break.

5. That the distortion must occur at a comparatively early period after interment, because when all, or nearly all, the animal matter of the bones is destroyed, they cannot bend.

Lastly. That some of the apparently *bent* bones are really *broken*; Professor Wyville Thomson, of Belfast, having first pointed out to the author minute cracks or fissures in some of the distorted crania.

VIII. "Preliminary Researches on Thallium." By William Crookes, Esq., F.C.S. Communicated by Professor Stokes, Sec. R.S. Received June 19, 1862.

Having so recently been honoured by the Council of the Royal Society with a grant from the Donation Fund for the purpose of defraying some of the expenses of my researches on this new element, I should not have ventured to offer to the Society so incomplete a notice as the present one, had I not within the last week heard that a continental chemist, Professor Lamy, of Lille, has recently been fortunate enough to meet with a residue containing thallium in considerable quantities, and has isolated the element and prepared several of its compounds: it therefore appears advisable at once to place on record a description of several compounds of this body obtained since the date of my first announcement of its discovery in March 1861, but which I had purposely avoided publishing in order that it might form part of a more complete memoir on the subject which I had hoped at some future day to have the honour of sub-